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The Boundaries of Yellowstone Park.

IT is hardly safe to prophesy what this Congress will do in regard to the boundaries of Yellowstone Park, but the situation just now is this: In the House of Representatives Mr. Stockdale's bill, which is in the interest of the so-called Montana Mineral Railway Company, and gives them the exclusive privilege of using the park as a railroad thoroughfare, has been favorably reported, and is now on the calendar. The Senate has passed the bill presented by Mr. Warren. This cuts off a small portion of the park north of the Yellowstone River in order to give facilities for building railroads to Cook City without invading the park territory, and it adds to the park some 1,200 square miles, although the addition does not include more than one-half of the forest-reservation which was set apart by the President, while the portion of the reservation not included in the park is restored to the public domain. We should prefer very much the original bill of Senator Vest, which included within the boundaries of the park the entire reservation made by the President, but even Senator Vest was induced to vote in favor of the Warren bill as probably the best compromise which could be secured.

The debate on this bill, as reported in *The Congressional Record*, furnishes some instructive reading. Senator Vest stated, with considerable humiliation, as he said, that he had found after a struggle of twelve years that a persistent and unscrupulous lobby is able to do almost anything it pleases with the public domain, and he expressed the fear that this lobby "would not permit" even the passage of this Senate bill. One would naturally suppose from this that the promoters of this railway scheme comprised a large body of citizens with extensive political and pecuniary influence. On the contrary, it was stated in the debate that this so-called company had never had a meeting; that no books were ever opened for the subscriptions to its capital stock; that it has never made a report; that it has never built a rod of railway; that under the laws of the state of Montana all its supposed rights were forfeited long ago; and finally, that all these people desire is to obtain a franchise from Congress for the purpose of selling it to the Northern Pacific Railroad Company. Evidence seems to have been submitted to both Houses of Congress which fully justifies these charges against an unscrupulous band of adventurers. Senator Vest declares that they have been able to block all legislation relating to the park simply because they are a compact organization, like an army, persistent, aggressive, untiring and determined to capture this charter and make money by its sale. On the other hand, the friends of the park are few and apathetic, without any co-operation and no influence with either great party, because there are no votes in the Yellowstone either for Republicans or Democrats or anybody else. Senator Sanders, in alluding to these statements of Senator Vest concerning the lobby and its power, added that the Senator from Missouri "had spoken with moderation."

Even if these statements were somewhat exaggerated, it seems to plain people who are not members of Congress that there ought to be sufficient virtue in the House of Representatives, when such facts are brought to the attention of its members, to defeat this Mineral Railway job; and we again call upon all those who are interested in forests and forestry, in natural beauty, and in the good name of the country, to make personal appeal to their Congressmen to vote and work against this Stockdale bill. Senator Warren's bill is not all that is desirable, but certainly it is better than nothing. The twelve-mile strip added to the eastern side of the park is more heavily wooded than the part rejected, and it contains the headwaters of all the streams which run into the Yellowstone River and Lake, besides the sources of the Stinking Water River. It is a misfortune that the portion of the reservation on the south, lying west of the Snake River, is cut off. There are some moose here, although the principal breeding-grounds for great game are east of the Snake River. In our judgment the new states make a mistake in permitting these mountain-regions to pass under private control, but no law which is opposed by the Senators and Representatives of these states can be passed, and the fact that the Warren bill is supported by the Senators from Idaho, Wyoming and Montana gives some encouragement to hope for its passage in the House. The surrender of a few square miles in the north-east corner is no serious loss, since it leaves a good natural boundary for the park and makes an opening for railroads, which will leave no excuse for any further raids for right of way through the park by speculators. Finally, if this Senate bill passes the House, the boundaries of the park will be fixed with some certainty for years to come, at least, and until these boundaries are permanently established the park will be threatened with invasion of one kind or another constantly. As the people learn to appreciate this region, and become familiar with its uses and value, the next change demanded in its boundaries will probably be a further enlargement of its area.

The Management of Cemeteries.

IT seems to be a pretty general belief that in almost every field of human effort demand precedes supply. But in matters where a refined public taste is concerned the supply of good work precedes and creates the demand. For many years the best pictures produced by American artists have not been those which sold the best, and, of course, those which sell the best most truthfully represent the condition of the public taste. Again, our appreciation of the best foreign works of our time has been largely due to dealers who imported the pictures of such men as Corot, Rousseau and Daubigny before we even knew their names, and long before we could understand and properly estimate their art. It is true that in the long run dealers may have profited by this experiment, but the public has profited by it far more, and it is just that we should feel grateful to

them as to unselfish benefactors. What we wish to do now, however, is to call attention to another illustration of this truth which has been suggested by the published report of the *Proceedings of the Convention of the Association of American Cemetery Superintendents*, which was held last autumn in Chicago.

To some eyes there may seem no hint of artistic things or questions in this title. But our readers are aware that we consider the right treatment of the rural cemetery, an institution which is almost peculiar to America, rests on important and interesting artistic principles. And yet it is evident from this report that the greatest obstacle in the way of such treatment is the persistent bad taste of the public. We might suppose that our cemeteries are not more beautiful because it is hard to find people to make them beautiful. But the case is really the reverse of this. Many at least among the persons who are employed to care for them know what aspect they ought to wear, and are eager to give them this aspect; but their employers bar the path. If the bad taste of the committee or trustees who control a cemetery is not to blame, then it is usually the bad taste of the majority of individual lot-owners.

Of course, we should not assert this simply on such statements as that "the superintendents of cemeteries have to bear with many things that they do not like in catering to the public." If no explanations with regard to points of difference were given, we might conclude that the superintendents rather than their patrons need an education in good taste. But the various addresses given at length in this report bear such clear witness to the correctness of the views of prominent cemetery superintendents, and to the conflicting views of their patrons, that one cannot help feeling confident as to the source from which improvement may be expected.

For example, Mr. G. H. Scott, of Rose Hill Cemetery, Chicago, in discussing how large a part nature should play in the cemetery, said: "What may be considered natural in a cemetery? In the first place, grass and trees. There should be an abundance of grass and a sufficiency of trees and shrubs, with as few pathways as possible and no more driveways than are absolutely necessary. A cemetery-lot with mounds or graves not higher than three inches above grade of plain sod, well clipped and trimmed, gives that appearance of neatness, simplicity, quiet and beauty which every such lot should have. The prevailing anxiety on the part of lot-owners to surpass each other in the erection of costly monuments, vaults and stone-work generally, is detrimental to the natural appearance of a cemetery. Another encroachment upon the natural appearance of a cemetery is carpet-bedding. To take the natural and well-trimmed sod from a grave and cover it with a carpet-bedding of plants and flowers, giving it the appearance of a patch-work crazy-quilt, is, to say the least, absurd, and certainly not in keeping with the natural appearance of a cemetery representing the peaceful resting-place of the dead. Not so with plants of wild flowers and hardy herbaceous perennials. They are things of nature. This class of plants are inexpensive, will live over winter, flourish without care, become larger in size and increase in beauty every year, and should be dispersed over the ground so as to give them a natural appearance. A cemetery should be a place for meditation, a place where the living, pleased and satisfied with its natural appearance of peace and quiet, and free from the busy hum of human toil and artistic dazzle, may anticipate the time when they, too, must succumb to the inevitable, not mournfully, but cheerfully. Besides, if cemeteries generally were kept more natural in appearance, their cost of maintenance would be less."

We have taken these sentences out of their context and massed them so as to show, as briefly as possible, Mr. Scott's idea of what the treatment of a rural burial ground should be. And from the speech of Mr. Higgins, of Woodmere Cemetery, Detroit, we may take a few more sentences with a similar purpose. "What," he asks, "are the essentials of a perfect cemetery? Beauty and harmony. Harmony, as I here use it, should not be considered as flatness or want of variety, but as a lack of elements of discord which it is difficult to overcome. Thus a small Niagara would not be desirable in the proposed site for a burying-ground, neither beetling cliffs nor wild gorges. Picturesqueness may occasionally be properly sought after in the improvement of parks or private grounds, but is scarcely productive of that air of quiet repose which should be one of the main characteristics of the last resting-place of man. . . . The two crying evils of all cemeteries are our present great ugly headstones and our unsightly grave-mounds. It seems to me, however, that in some cemeteries which are working toward the lawn-plan, they lay too much stress on prettiness and bring with it the puerilities, polish and showiness of highly kept front yards or showy lawns, and that too much money is expended in ornamentation and display. Now, neatness is one thing, display an entirely different thing. I believe that the nearer we keep to nature in our methods of cemetery improvement, the better results we shall obtain and the more economical will be our management of affairs. We must bear in mind that cemeteries are designed for burying-places for the poor as well as for the rich, and that extravagance in ornamentation or wasteful methods of care defeat the very purpose for which they were intended."

Surely these ideas are sound. They are the truly artistic because the truly fitting principles in accordance with which rural burial grounds should be designed and maintained. It is pleasant to know that persons holding executive positions in our cemeteries entertain such ideas, and we should be glad to know that they were less frequently hindered from acting upon them by their employers.

The Cork Oak.

A SUBSCRIBER in California has asked us for information with regard to the cultivation of the Cork Oak, and being unable to find anything satisfactory on the subject published in works of European silviculture, we addressed the question to our learned correspondent, Monsieur Charles Naudin, of Antibes, in France, who sends us the following reply:

The Cork Oak, like the Chestnut, is only found on sandy soil, and grows in forests in Provence, in Roussillon, Corsica and Algeria. It is not cultivated, although owners of sandy soil sometimes sow the acorns on ground from which forests of this tree have been removed, but their operations are confined to planting the acorns, and nothing is done to the trees until they are old enough to produce a crop of bark. It is believed, however, that it will be a profitable operation to pay some attention to the young plantations, especially to clear them of other trees and shrubs and to prune the trees in order to hasten the development of their trunks. It is customary to find Cork Oaks mixed with other trees—Pines, Ilex, Chestnuts, etc.

From the classical Quercus suber the botanist Jacques Gay separated as a distinct species, under the name of Q. occidentalis, a variety with very thick corky bark peculiar to south-western France outside of the Mediterranean basin, which he distinguished from the ancient Q. suber by the biennial ripening of the acorns, but this character is so little constant that botanists have not considered this form specifically distinct, although, and this is worth noting, it is much hardier than the Mediterranean form. Fifty or sixty years ago, Monsieur Trochu, father of the General of that name, made plantations of the two Cork Oaks on Belle Isle, on the coast of Brittany, in an oceanic climate. The Oak of the south-west flourished here while those from the shores of the Mediterranean all perished. This seems to indicate a specific difference, or at least a physiological difference. I do not doubt that the Mediterranean Cork Oak will succeed in California if it is planted in sandy soil; at any rate, it would be interesting to try there the two species, or the two varieties, in order to judge by comparison which is the more valuable.

Speaking of Oaks, an old forest-officer, Monsieur Bouguet de la Grye, tells me that Q. Banisteri (Q. illicifolia) of the southern United States produces great quantities of acorns. If it really possesses this quality it should be introduced into Algiers, where the acorns would serve as food for pigs.

The Morningside Plateau, New York.

MUCH has been said of late about Morningside Park in this city and the various large buildings which it is proposed to erect in its neighborhood. But comparatively few persons, even in New York, understand what a great feature of New York these buildings and their surroundings may eventually become. The site and character of Morningside Park itself are pretty well known. The tract where the proposed buildings will stand is called Morningside Plateau, and extends from Morningside Avenue at the east, where it forms a high bluff overlooking the park, with a distant view of Long Island and the Sound, to Riverside Drive, which follows the brow of lofty banks of the Hudson. This commanding plateau extends north and south for nearly a mile and a half and varies in elevation from 110 to about 145 feet above tide-water level, and the only buildings which now stand upon it, with the exception of scattered cottages—relics of the time when the city was far away—are the Leak and Watts Orphan Asylum, the old De Peyster house, once a noted country-seat, and the Bloomingdale Insane Asylum. The presence of this last-named institution had, for more than a generation, deterred people from purchasing land in the neighborhood for private residences, and it was owing to the exertions of local property-owners, intent upon redeeming their possessions and bringing them into a profitable market, that the rugged tract along its eastern skirts was set apart for public use and transformed into a pleasure-ground.

Then, several years later, the ground owned by the Orphan Asylum was purchased by the trustees of the proposed Protestant Episcopal Cathedral, and at about the same time the property-owners, determined to get rid of the Insane Asylum, induced the Legislature to pass a bill opening One Hundred and Sixteenth Street, through to the river. This action induced the governors of the New York Hospital, which owns the Insane Asylum, to decide upon its removal to land purchased long ago at White Plains, and to offer its present site at public sale in lots suitable for private building. But then the trustees of Columbia College obtained an option on the entire property, and a bill, which had been introduced into the Legislature to provide for the cutting of another cross street through the plateau, was defeated in order that the college might have an undisturbed site of suitable extent. All indications point to the fact that work on the cathedral will shortly be begun; and there is likewise no doubt that Columbia College will soon raise the money needful to purchase the land now reserved for it and erect a fine group of buildings.

The Cathedral Parkway will be a wide avenue crossing the southern end of this plateau on the line of the northern boundary of Central Park—that is, at One Hundred and Tenth Street—and from this point for the distance of three city blocks is the site of the future cathedral, while the new site for St. Luke's Hospital adjoins it on the north. A little farther north and west, between One Hundred and Sixteenth and One Hundred and Twentieth Streets, is the proposed site for Columbia College, and immediately north of this again, extending to the line of One Hundred and Twenty-second Street, is the proposed site for the College for Training Teachers. The space between the Boulevard and Riverside Drive is narrow, and, as a rule, somewhat sloping; so there will be a magnificent view from all these structures that are to be, while, if their architecture is what we may expect, they will vastly increase the attraction of the eastward outlook from the beautiful drive, forming, for a great part of its length, a background of stately buildings lifted above those on its immediate edge. Nothing, therefore, could be more fortunate for the city than this agreement between several very wealthy corporations to erect their buildings in this place; and, of course, the profit will not simply be the presence of these buildings themselves. Once the Insane Asylum is removed, the old prejudice against the plateau as a place of residence will vanish, and the existence of the ecclesiastical and collegiate groups will, indeed, bring it into the very highest esteem for this purpose. The value of any land within the borders of New York is and always will be too great for us to cherish the hope that building-sites, even in this locality, will be laid out on the generous scale which has been found practicable in other cities, especially in the west, and which adds so greatly to their dignity, beauty and individuality.

We cannot expect, even in the neighborhood of the grounds of the cathedral and of Columbia College, to find private houses surrounded by lawns and gardens of any great extent. But many recently erected buildings along Riverside Drive prove that it is possible for the wealthy, even in New York, to build houses which do not actually touch each other, and even this much isolation gives the architect a great opportunity to improve upon the average New York house and secure both a greater degree of architectural dignity and a fuller expression of what we may call domestic personality. All the architects who have built along the drive have not used this opportunity well. Sometimes an effect of rampant ostentation has been secured instead of dignity and the home-like look which every private house, however large and costly, ought to wear; and instead of an artistic design we see one which is no more than artfully elaborate, or just as artfully and inappropriately rugged and rude. But as the years go on we shall learn more and more what true architectural elegance and true architectural simplicity mean. And as it will be a good many years before Morningside Plateau is covered with buildings, we need not doubt that it will eventually be a district in which New Yorkers can feel genuine pride.

It is interesting to know that when, about the year 1815, the New York Hospital found its city building too crowded for the accommodation of its insane patients and accordingly purchased the "Bloomingdale Farm," the price paid was $4,000, although this farm was of greater extent than the property now owned by the institution, and that two years ago, when a hundred building-lots of ordinary size were cut off from this and sold, some of them individually brought $4,000 in spite of the fact that they lay on still unopened streets. With the recent promise of the advent of the cathedral and the college, values have vastly increased again. Lots in the neighborhood of the asylum property could now be sold at from $15,000 to $20,000 each, and few owners are willing to sell at all.

New or Little-known Plants.

Viburnum cotinifolium.

THIS is a handsome shrub of Cashmere and the northwest Himalayas, where it is common at elevations of from four to seven thousand feet above the sea-level, and a near relative of the common Wayfaring-tree of Europe, Viburnum Lantana, from which it only differs in the dentation of the leaves and the larger limb of the corolla. It is a vigorous plant with stout stems, which attain a height of five to ten feet. The leaves are ovate or elliptical, obtuse or subacute at the apex, rounded, truncate or subcordate at the base, minutely crenulately serrate, stellate-woolly on the under surface when young like the young shoots, but ultimately nearly glabrous except on the lower side of the nerves, reticulate-rugose, dark green above, pale below, and about three inches long by two inches broad. The flowers, which open here by the end of May, are produced in dense thick-branched hirsute corymbs two or three inches across and generally terminal. The calyx is narrowly obconic, glabrous, with a short limb, the triangular lobes usually tipped with red. The corolla is white tinged with pink, shortly campanulate, the limb an eighth of an inch across when expanded, the spreading lobes as long as the tube. The drupe is oblong, compressed, a quarter of an inch long, bright red at first but ultimately nearly black; the seeds two-grooved on the back, and ventrally subconcave and three-grooved.

Viburnum cotinifolium (see page 245) was raised in the Arnold Arboretum, in 1881, from seed sent from the Botanic Garden of St. Petersburg and has proved hardy here with careful protection, although plants derived from other sources have not been able to bear the winter climate of eastern Massachusetts.

The size and the color of the flowers make it a handsomer plant than V. Lantana, which is, however, more vigorous and hardy here, and which will probably never be supplanted for general cultivation in the northern states by its Himalayan relative. *C. S. S.*

New Orchids.

DENDROBIUM BARBATULO-CHLOROPS, Rolfe.—A natural hybrid between Dendrobium barbatulum and D. chlorops, which flowered in the collection of Major-General E. S. Berkeley, of Southampton. It has the white flowers and general shape of the former, with the crest and light green side lobes of the lip of the latter. Both the species are natives

of the Deccan Peninsula, and grow together in quantity. Its appearance is therefore very interesting.—*Gardeners' Chronicle*, March 5th, p. 298.

Pelexia Travassosii, Rolfe.—An elegant species, one of the prettiest of the genus, with white flowers lined with brownish red. The leaves are olive-green, with silvery nerves and a few white spots. It was sent from Brazil by Senor Travassos, and flowered in the Kew collection and elsewhere.—*Gardeners' Chronicle*, March 12th, p. 330.

Cypripedium × Brysa, Veitch.—A secondary hybrid raised from C. × Sedeni candidulum crossed with the pollen of C. Boissierianum, and said to be like a large form of the former, with a greenish tinge. Messrs. James Veitch & Sons, of Chelsea, received an award of merit from the Royal Horticultural Society for it on March 8th last.—*Gardeners' Chronicle*, March 12th, pp. 343, 344.

Cypripedium × Ianthe, Veitch.—A secondary hybrid raised in the establishment of Messrs. James Veitch & Sons, of Chelsea, from C. × Harrisianum crossed with the pollen of C. venustum. It received an award of merit from the Royal Horticultural Society on March 8th last.—*Gardeners' Chronicle*, March 12th, pp. 343, 344.

Dendrobium densiflorum, var. clavatum, Rolfe.—A distinct geographical variety from the Shan States, remarkable for its very clavate pseudo-bulbs, which taper to a very slender base. The flowers are white, with an orange-yellow lip. Its peculiarity may be due to the comparative dryness of the region it inhabits. It was imported by Messrs. F. Sander & Co., of St. Albans.—*Gardeners' Chronicle*, March 26th, p. 394.

Cypripedium Calceolus × macranthos, Barbey.—A natural hybrid between C. Calceolus and C. macranthos, imported from the Birch-forests of western Siberia, where the two species grow intermixed. It flowered with Monsieur Barbey at Valleyres. It is precisely intermediate in character, as the flowers are smaller and paler in color than C. macranthos, with all the organs of the flower modified in the direction of the other parent. It is specially interesting as the first natural hybrid in the genus.—*Gardeners' Chronicle*, March 26th, p. 394.

Pelexia Wendlandiana, Kranzlin.—A species, remarkable for its long filiform sepals, which appeared in the collection of Monsieur Wendland at Herrenhausen. It bears a raceme of about twenty greenish brown flowers, with a white lip.—*Gardeners' Chronicle*, April 2d, p. 426.

Cypripedium × Cleopatra, O'Brien.—A secondary hybrid raised in the collection of C. Winn, Esq., of Birmingham, from C. Hookeræ crossed with the pollen of C. × œnanthum superbum. It has the general characters of the mother plant, but modified in the direction of the other parent, especially in the purplish crimson coloring of the upper half of the dorsal sepal and the outer halves of the petals.—*Gardeners' Chronicle*, April 9th, p. 458.

Calanthe vestita, var. Fournieri, Rolfe.—A well-marked geographical variety, imported from Borneo by Monsieur Fournier, of Marseilles. The flowers, which vary from pure white and blush to deep rose-pink, are smaller than those of the type, while the pseudo-bulbs are constructed in the middle, like those of the variety Turneri. It recently flowered with Messrs. F. Sander & Co., of St. Albans.—*Gardeners' Chronicle*, April 16th, p. 488.

Cypripedium × Lawrebellum.—A hybrid raised in the collection of Sir Trevor Lawrence, Bart., M. P., from C. Lawrenceanum crossed with the pollen of C. bellatulum. The flower is intermediate in shape, the color rich rosy crimson, with a tinge of green at the base of the sepals and petals, a pure white margin and some purple-brown lines on the upper sepal, and some chocolate spots on the petals. It was awarded a first-class certificate by the Royal Horticultural Society on April 12th last.—*Gardeners' Chronicle*, April 16th, pp. 502, 503; April 30th, pp. 560, 561, fig. 82.

Dendrobium × Adrastea, Veitch.—A hybrid raised from D. Pierardii crossed with the pollen of D. superbum. The sepals and petals are pale pink and the lip primrose. It was raised by Messrs. James Veitch & Sons, of Chelsea, and exhibited at a meeting of the Royal Horticultural Society on April 12th last.—*Gardeners' Chronicle*, April 16th, p. 503.

Lælio-Cattleya Marriottiana.—A hybrid raised in the collection of Sir William Marriott, of Blandford, between Lælia flava and Cattleya Skinneri. It bears upright spikes of yellowish pink flowers, the younger ones having a brownish tint. It received an award of merit from the Royal Horticultural Society on April 12th last.—*Gardeners' Chronicle*, April 16th, p. 503.

Kew. *R. A. Rolfe.*

Begonia Gloire de Lorraine.

THIS is the name given to a new winter-flowering Begonia raised by the Messrs. Lemoine from B. Socotrana, as the seed-parent, and B. Dregei, as the pollen-parent. The seeds, which ripened in February, 1891, were sown at once and came up in the spring. The young seedlings began to flower about the middle of November and are still in bloom. Although B. Socotrana is bulbiferous and B. Dregei tuberous, the hybrid forms neither tubers nor bulblets, but the base of the stem is throwing out many shoots, which will insure the rapid multiplication of the plant.

The leaves are rather small, nearly regular, of a clear green; the flowers almost exclusively male, with four petals, are large, and borne in broad panicles, covering the whole superior part of the plant. They are of a fresh rose color, and, being not deciduous, remain a very long time on the plant. This novelty (see page 247) was exhibited in February before the National Horticultural Society of France, in Paris, and was awarded a first-class certificate with a special mention, and it is highly commended in the French horticultural journals. It is probable that older and stronger plants will make admirable specimens.

Grape "Proligère de Varna."

THIS Grape already forms the larger part of some of the vineyards about Varna, France. It is native to the shores of the Black Sea, and appears to be quite variable. There are already several distinct varieties grown in the vineyards of Varna, some of them being excellent for table use. The grape makes a red wine of fairly good quality, but it could undoubtedly be much improved. The most interesting feature of the Grape is its productiveness, and it is this which suggested the name Proligère de Varna. Instead of bearing only two or three bunches upon every shoot, as most Grapes do, it has from four to eight. One might almost say that every tendril is transformed into a grape-cluster.

The plant, as growing in the vineyards, may be briefly described as follows: The canes are very vigorous and attain a length of several metres; they are commonly cut back. The wood is yellowish red, downy; internodes of unequal lengths, longitudinally grooved; buds large, white, pubescent. Petioles robust, cylindrical, tomentose, reddish brown, and from seven to eight centimetres long. Leaves orbicular, thirteen to fifteen centimetres in diameter, the central sinuses of the lower ones oval and almost closed, those of the upper leaves being considerably larger, dentate, the teeth short, strong, mucronate; the lower surface pubescent, veins prominent; upper surface glabrous, but not glossy, showing a net-work of fine non-protruding veins. Clusters three to eight upon each shoot; peduncles green and red, short, very strong. The lower clusters are ten to fifteen centimetres long and quite compact; the upper ones are smaller, more open, and sometimes bear a tendril. Pedicels short (four or five millimetres), rugose, the inner extremity slightly enlarged. Berries almost spherical or slightly oblong, the longitudinal diameter being sixteen millimetres, the transverse fifteen millimetres; color a uniform black; skin moderately thick and rich in tannin; flesh deep grayish red, sweet and piquant to the taste. Seeds greenish brown, rounded, not rugose.—*Ed. André, in Revue Horticole.*

[No doubt this Grape would flourish in California, and it would be worth testing in the southern Atlantic states. Even if it is nothing more than a variety of Vitis vinifera, it is sufficiently distinct to suggest to hybridizers the idea of crossing it upon some of our native species.—Ed.]

Foreign Correspondence.

Forest Hill Nurseries.

THE nurseries of the well-known firm of Messrs. J. Laing & Sons are about eight miles from St. Paul's Cathedral, and two from the Crystal Palace at Sydenham. They were founded by the veteran John Laing about forty years ago, and they are now famed for tuberous Begonias, Gloxinias and Caladiums, which have been a specialty with Messrs. Laing for many years. The tuberous-rooted Begonias are grown there better and in larger quantities than anywhere in England. Mr. John Laing, indeed, may be called the originator of the Begonia cult, as he was one of the first to set to work in earnest to breed improvement into these plants, and he has done far more to make the Tuberous Begonia what it now is than any other breeder, professional or amateur. I was invited last week by Mr. Laing to inspect his first batch of Begonias in flower. These were in two large houses, each one hundred feet long by fourteen feet in width, low, span-roofed, with a low fibre-bed on one side and a cinder-bed on the other side of the path. The sun shone full in upon the plants, and the temperature was that of a moist stove. Laing's Begonias are always first-rate, but those I saw the other day were certainly far finer than any I have ever seen. One house contained single-flowered varieties. They were in nine-inch pots, planted in yellow loam, manure and plenty of sand, and they had been started in January. Many of the plants were a yard across, with leaves often a foot long and half as broad, very thick and succulent, pictures even without the flowers, and the flowers were simply marvelous, both in regard to size and colors. Flowers four inches across were numerous; there were also many kinds which, while having only medium-sized blooms, were elegant in form. The florists' ideal flower, round and flat as a saucer, was represented, too, and was pointed out with pride by Mr. Laing, who remarked that, although they were not every one's choice, yet the florist had to be considered, and that it was only when aiming for his ideal that good things

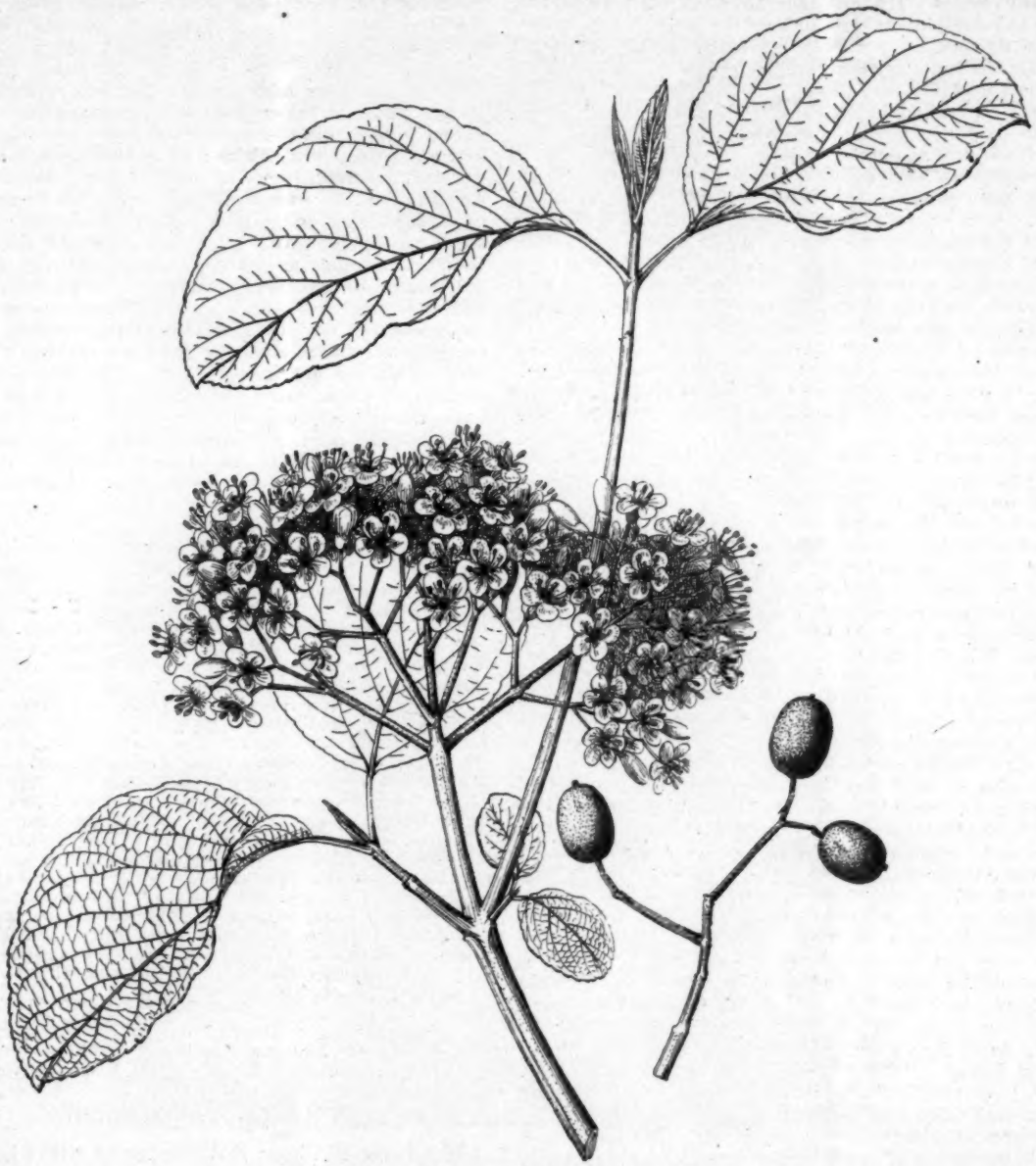

Fig. 47.—Viburnum cotinifolium.—See page 243.

of all kinds were obtained. All these magnificent plants, robust in habit, large in flower and rich in shades of color, had been selected from the fields of seedlings which in this nursery are raised every year and planted outside in June. The best of them are named, but, says Mr. Laing, "we get on so fast and improve so every year that the choicest of last year are only second-rate compared with those of this."

In the other house all the plants were double-flowered, and these were even more astonishing than the single-flowered ones. "We are aiming now to get erect-flowered double varieties. Hitherto they have had the drawback of being too weak in the stalk to bear the weight of the heavy double flowers, so that they looked 'floppy.' But, see," said Mr. Laing, "we are getting on." And sure enough there were plants, large and full of flower, all holding their big Carnation-shaped blooms perfectly upright without the support of stake or tie of any kind. "We shall in time, if we care to, get the stalks so short and stout that the flowers will all hold up their heads like Cinerarias." Begonias have proved exceptionally plastic in the breeders' hands. It is scarcely credible among outsiders that the best of the seedlings we now possess are the progeny of several Andean species of Begonia which were almost unknown twenty years ago, and the flowers of which, compared with the huge blooms of some of Mr. Laing's latest seedlings, are as a Wellington apple is to a crab.

The named kinds which I made special note of were Princess May, a pure white, double, perfect in form, large and full; "the best white yet," Mr. Laing said. It has just returned from an exhibition at Regent's Park, where it had been awarded a first-class certificate. Lady Theodore Guest, another big double-flowered seedling, was remarkable for its wavy petals, colored buff, tinged with salmon. Mrs. Regnart, with full chrome-yellow flowers as large as a child's fist, had also received a certificate.

The best of the new erect-flowered double sorts was one named Baron Schrœder. The blooms were fully three inches in diameter, very double, perfectly erect and colored a rich orange-scarlet. Perfection was another plant with stem erect and a large double flower colored rosy scarlet. Baroness Burdett Coutts had semi-erect flowers, large, wavy, and colored a soft pale salmon. Another pretty variety was named Mrs. Coomber; it had Picotee-like flowers, colored creamy white with a rosy edge.

Mr. Laing says he has a great display of Begonias from April till October, and that he could have it all the year round with a little management. The two houses described were the "show-rooms" merely; the "workshops" revealed how the thing was done. Long low houses and frames were filled, or being filled, with boxes of recently pricked off seedlings, a dozen or so young lads, fresh from the board-schoolmaster, being seated round a big bench pricking the little plants off. The boxes used were fifteen inches by nine and two inches deep. Forty plants were put into each box, of which ten thousand at least would be filled this year. The frames were placed upon hot-beds of manure, with a thick layer of spent hops spread over the top of the manure. "Nothing like hops to keep down the fly and make the seedlings shoot along," said Mr. Laing. "What becomes of them all?" I asked. "Why, bless you," said he, "they don't stay with us long; we can easily find customers for all we grow."

The work of selection and crossing, which Mr. Laing does himself, is conducted in the houses in which only specially good varieties are grown, so that in the event of stray pollination not much harm is done. Mr. Laing informed me that the very best kinds are obtained from seeds, and that, except in very few cases, it is scarcely worth while to propagate the plants from cuttings.

The Caladiums are second only in interest to the Begonias. Some of the varieties are gorgeous in color, and the leaves as large almost as umbrellas. Messrs. Laing grow Caladiums better than any one in London, their groups at the great exhibitions being far ahead of every other exhibit of the same kind. I noted down the best, to my taste, of all the Caladiums I saw there among the hundreds of named varieties grown. Mrs. Harry Veitch has large broad leaves, blush-white, with the midrib and larger veins colored rich crimson; John Laing has equally large leaves colored bright rose-red, with a creamy white border; Reine de Danemark is colored delicate rose with carmine veins, and netted all over with green; Maria Mitjana is almost wholly rich rose; Madame Marchand has grand leaves, colored rosy carmine, margined with dark green; Aurore Boreale is deep red, lined with carmine and blotched with a peculiar metallic green; Chactas has large deep red leaves with green borders; Raymond Lemoinier has a creamy white centre, a rich red outer part, very large leaves, and is a magnificent variety: P. S. Williams is deep rose, with carmine-red veins; Candidum has white leaves, with very conspicuous green ribs; Bellone is rosy colored in the centre, red-maroon toward the margin, and tinged with brown; Leopold Robert has a beautiful leaf, colored blush-white, with a rich green border and carmine-red ribs; Gaspard Crayer has a red centre, with a broad border of deep green blotched with red; Ornatum has a grass-green ground, with carmine ribs and crimson veins; Charlemagne has large rosy red leaves, with dark red veins; Madame M. Scheffer has large white leaves, with rosy ribs, veins and margin. These sixteen varieties are remarkable for the large size of their leaves, their exceptionally brilliant colors and delicate tracery. They are not all Mr. Laing's first favorites, but they are what I would select for myself. The cultivation of these plants is not at all difficult, and yet there are very few growers who can produce anything like the grand specimens which come from Forest Hill. Here are the details of culture for them as recommended and practiced by Messrs. Laing:

Caladiums are easily managed. They require a good moist heat to develop their beauties, and a fair amount of shading at the commencement of the season, as in some instances the texture of the leaf is thin, and, unless carefully shaded from the sun, the glass is apt to burn the foliage, and thus permanently disfigure it; but avoid too heavy shading and too much heat, as this encourages flimsiness and thin foliage. The bulbs should be potted when growth commences in spring, and a compost of two parts peat, one part turfy loam, one part silver sand, and plenty of drainage, and placed in a brisk bottom-heat, with a moist temperature of seventy degrees, and, with frequent potting, they will soon make large plants. Care should be taken not to water very liberally until the pots get well filled with roots, and then, if required, apply liquid manure regularly. Syringing is beneficial.

For ordinary purposes, bottom-heat to start them is quite unnecessary, but a light position near the glass is of more importance, and is at all times essential. The plants in summer, before being removed to cool houses, should be hardened for a week in a less warm house than the stove, otherwise much of their beauty will go before they get used to the change.

When their beauty begins to fade, gradually dry them off by giving them less water, but on no account should the soil be dust-dry all the winter, or when starting-time arrives the bulbs may be found to have disappeared from the "dry-rot" disease.

The Forest Hill Nurseries are not devoted only to a few things, for there is also a good collection of Orchids, stove and greenhouse plants and fruit of all kinds.

London. *Visitor.*

Cultural Department.

The Loss of Vigor in Varieties of Strawberries.

THE marked decline of the Wilson Strawberry during recent years is well known to all who have been familiar with this fruit as grown in this country during the last two decades. Yet a few growers, among whom may be named Mr. J. M. Smith, of Green Bay, Wisconsin, continue to have excellent success with this time-honored variety. Indeed, Mr. Smith claims that no recent variety among many he has tested fully equals the Wilson in yield. He has long ascribed his success with the Wilson to the fact that he invariably takes his plants for setting from beds set the preceding spring, and which have not borne a crop of fruit.

Certain experiments that I have been making lead me to

believe that Mr. Smith is correct in this reasoning. The results of these experiments seem to show that the so-called "spot disease" or blight of the strawberry, caused by the fungus Ramularia Tulasnei, may produce an enfeebled condition of the plant from which it does not rally for at least several generations. It is well known that the Wilson Strawberry is very subject to this disease, but that plantations do not often suffer much from it until the year after planting.

In the spring of 1889 Mr. Smith kindly sent me fifty plants of what he thought his most vigorous Wilson strain. These were divided into two lots of twenty-five plants each, and planted in two small beds about four rods apart. Both beds did well during the first summer, and yielded a good crop of fruit in 1890. But after the fruiting season, one of these beds was badly affected with blight, while the other, from some unknown cause, was nearly or quite exempt from it, and the same was true in the summer of 1891, the same bed being free from blight both seasons. The result is that but forty-four plants in the diseased bed have survived the past winter, while 234 plants have survived in the other bed. If there is any difference in the environment of the two beds, the one that has suffered so badly from blight would seem to be the more favorably located, hence I can ascribe no other cause for the failure of this bed than the disease from which it has suffered.

In order to test the validity of Mr. Smith's theory, as noted above, I have been careful to plant each spring a new bed of young plants taken from the bed set the previous spring, and which consequently has not borne a crop. With these I have been comparing other beds formed of young plants from the diseased bed mentioned above, and also from other beds that, while not especially diseased, had borne at least one crop of fruit. I have endeavored to secure a comparative record of yields from these plantings, but as the exact number of healthy plants in the different beds was not noted at the time the fruit was gathered, the figures based on crop alone might be very misleading. It will be more just to compare the vigor of the different plantings by noting the number of surviving plants at the present time. I may add, however, that the differences in yield, so far as ascertained, are quite as conspicuous as are those of plant production.

Last spring a bed of sixty-five young plants was made, the plants being taken from a bed set the previous spring, and which had been set in the spring of 1890 from the healthy bed grown from Mr. Smith's plants set in 1889. In other words, the

Fig. 48.—Begonia Gloire de Lorraine.—See page 244.

ancestors of these sixty-five plants had been free from disease and had not borne a crop, at least since 1888, and, as Mr. Smith affirmed, for many years previous. This bed now contains 332 strong plants, besides some others that have suffered from the winter, or a fraction over five and one-tenth plants to each one set last spring. It should be remarked here that August and September of last season were the driest I have ever known, which explains the meagre growth of plants. Twenty-six young plants from the blighted bed above mentioned were set last spring in two short rows adjoining the sixty-five plants just mentioned. The vigor of this blighted bed had become so much reduced that a larger number of young plants could not be obtained; these twenty-six plants are, therefore, from parents blighted severely for two generations, and yielding a crop of fruit the summer previous. But forty-three plants have survived the winter from this bed, or a little less than one and seven-tenths plants to each one set last spring.

Another small bed of thirty-nine young plants was set last spring adjoining the one just mentioned. For this the plants were taken from a bed that was set in 1889, and hence had borne a crop of fruit but which had not suffered much from blight. In this bed a fraction less than four plants have survived the winter for each plant set. Recapitulating then, we have:

Plants with ancestry free from disease, and not weakened by bearing, five and one-tenth surviving plants for each plant set.

Plants with ancestors suffering from disease two preceding generations, and further weakened by bearing, one and seven-tenths surviving plants for each plant set.

Plants with ancestry nearly free from disease, but having borne one crop of fruit, four surviving plants for each plant set.

It may be added that the above three lots of plants were all set on the same day and have received exactly the same treatment.

It will hardly be denied that the differences of vigor manifested in the above plantings are greater than we should usually expect from different varieties of the Strawberry similarly treated. The lesson seems clear enough. It is unwise to plant a new Strawberry-bed from a plantation that has suffered from the attack of Ramularia. The young plants from such a bed, whether they develop the disease or not, are reduced in vigor, and are not likely to prove satisfactory. I ascribe Mr. Smith's fine success with the Wilson Strawberry more to his having always grown his plants from parents that were free from disease, than from the fact that they had not been permitted to bear.

It seems not improbable that in fruits like the Strawberry better results may be gained through methods which aim at promoting the vigor of the varieties we already have, than in continuing the production of new seedlings, the method of improvement usually adopted.

Wisconsin Experiment Station. *E. S. Goff.*

Cultivation for Health.

THE notes from Colonel Pearson in a late number of Garden and Forest touch a question of importance in several directions. He planted Potatoes on poor soil, where they made but feeble growth, and near them he planted the same variety of Potatoes on soil enriched with nitrogenous manures; and the weak plants on the poor soil were attacked by insects and devoured before the others were touched—indeed, the strong plants were practically untouched. The same consequence followed when the blight appeared. The truth illustrated by this instance seems to be that insects and fungi, to a considerable extent, are in the habit of attacking and destroying vegetation already enfeebled or dying. My own illustration of the same truth occurred last year in a field where, of a dozen sorts, one variety stood green and untouched by beetles while every other kind was badly devoured. This was not owing to soil or fertilizers, for the same treatment was given to all sorts; and this exception was surrounded by others that were eaten. The two rows stood up as green as June in the middle of frost. What was the reason of this? My own solution is, that the exempted plants were of a new variety, a sport of Morning Star, that is exceedingly vigorous and does not blossom till September, nor mature till late November; in fact, it needs a season longer than I can give it. Planted altogether on the same date, the other sorts came up quickly and received a check from early frost; the tops were enfeebled. This new kind did not start up until after the frosts, and grew stoutly and steadily. The beetles attacked the feebler plants and did much mischief, just as they did in New Jersey. The lesson, therefore, is to get a vigorous growth which has a resistive power against insects. Examine your house plants; if the aphis appears you may, as a rule, look for water-soaked roots or pot-bound roots or other cause of enfeebled growth. The bugs appear as nature's provision to turn sickly and sickening vegetable matter into non-deleterious animal matter. On a wider scale we may look on the bugs and worms in many cases as scavengers in our fields for our own good.

Healthy growth should be the ambition of cultivators. I do not mean to say that those destroyers that prefer unwholesome vegetation will not go farther and spread devastation over comparatively healthy foliage; but I was astounded at the appearance of the Potato I have mentioned. Plant a Cherry-tree in a dark and shady spot, and it will be loaded with the black aphis; and your Viburnums will, if set in shade, be covered with green aphides; while the same trees, if in open sunny spaces, are comparatively free. So far as our Potatoes are concerned the tendency of our system of cultivation is to enfeeble the plant. We plant small potatoes or small pieces which do not nourish the stalk well to begin with, and do not contribute to the health of the plant. The application of Paris green is also enfeebling. The growth in poor soils without food, as Mr. Pearson suggests, is in the same line of deterioration. Of course, there are insect hordes and plant pestilences which sweep everything before them, but the value of vigor as a protection against the attacks of disease and of insects ought to be more thoroughly appreciated.

Clinton, N. Y. *E. P. Powell.*

Plum-flower Blight.

THERE is complaint that the flowers of Plum-trees are blighting badly. An examination of specimens thus affected shows that the blossoms, and particularly the flower-stalks, are brown instead of green, as they should be, and are covered with a gray mould. This mould is a fungus (Monilia fructigena) that frequently appears upon Plums, Cherries and Peaches later in the season, and most commonly when the fruit begins to ripen. The fungus is a rampant grower and will destroy a ripening fruit in a few hours, coating the decayed substance with a felt-like layer of spores.

In the case in hand the Monilia has come early while the crop is in the blossom state, and upon some trees no fruit will set because every flower is already mouldy, and all the flower-stalks are dead and covered with the spores of the fungus. Nothing can be done to save the fruit upon such trees, but it should be borne in mind that they are nurseries of a fungus the spores of which will find their way to other Plum-trees later in the season and induce a destructive decay. They may likewise seriously diminish the crop of the Cherry and Peach orchard.

Here is, therefore, an instance when spraying is important, not that the sprayed tree will bear fruit, but that the fungicide may save the fruit of other and more fortunate trees. Spraying one tree to save the crop upon another is practicable—it is, in fact, taking hold of the long end of the lever and using the ounce of prevention that often outweighs the ton of attempted cure.

Rutgers College. *Byron D. Halsted.*

Aquilegia Stuartii.

THIS Columbine has been described as the most beautiful of all cultivated kinds, and as the plants are just flowering with us for the first time from seed, I wish to add my testimony to its excellence. Its parents are said to be Aquilegia cœrulea, a North American species, and A. glandulosa, which is of Siberian origin. The plant shows plainly by its very dwarf foliage the influence of A. glandulosa, but the flower-stems are longer than those of that species, although not more than eighteen inches high, while the flowers are large in proportion, being four inches across. The petals are dark blue and the centre white, so that in general appearance the flowers resemble a good variety of A. cœrulea, but the spurs are shorter. Taken altogether, A. Stuartii is an improvement on its parents, both of which have a rather doubtful reputation as good border-plants. A. cœrulea has a provoking way of dying after flowering, and sometimes before, and A. glandulosa rarely does well in gardens unless raised from seed and set out where it is to remain. Stuart's Columbine is probably the only authentic hybrid from A. glandulosa, the seeds of which differ from all others, being of a dull opaque black, and the seeds of A. Stuartii are similar, while the seeds of other Columbines are of a bright shining black. A. Stuartii, we believe, was raised in Scotland, and was first distributed by Mr. Wm. Thompson, of Ipswich, England.

It should be remarked, also, that this Aquilegia is very early in flower; there was no other species in bloom when it first opened, not even the native A. Canadensis, and now all other varieties will be sacrificed as they flower to be sure that seeds can be saved true. In this way only can Aquilegias be perpetuated by seed.

South Lancaster, Mass. *E. O. Orpet.*

Notes on Forsythias.

THE Forsythias have blossomed with their usual profusion again this season, their bright yellow flowers giving us pleasure during nearly one-tenth of the year, for the earliest blossoms may be found by the middle of April, or soon afterward, and in a cool spring they will be preserved and continued for six weeks. Naturally we find the first flowers on the stems which trail on the ground, because there the buds first feel the effects of the sun on warm spring days.

The Forsythias bring up the much-disputed and never-ending question as to the correct names of the species or varieties, and there seems to be as much or more uncertainty to-day as to what form we shall get from a nursery, under any particular name, as there was ten years ago. All the variations may be divided into the two well-known characteristic forms—one a very long-branched, trailing, slender, pendulous shrub, the other with shorter, stouter branches, which are always erect, or only partially drooping. In certain situations we find plants of the first kind with less free-growing, vine-like, pendulous shoots, but this peculiarity appears to result from local conditions, and is not characteristic of the race. This pendulous species, which we know as Forsythia suspensa, is perhaps the most beautiful in flower because the most graceful when growing in a large clump or mass. In its best form it may be trained high up on a wall or allowed to grow naturally. In the latter case the long shoots grow until they bend over and the tips touch the ground, when they will form independent roots if the soil gives the least encouragement. In this way a single bush may eventually spread over a large area and form a mass composed of many individuals, but all from one parent—a sort of Walking Forsythia it might be called if compared with the habit of the so-called Walking Fern. One of the best botanical characters of the plant is that it has trifoliolate leaves, but these are often accompanied by single leaves on the same branch. In fact, simple leaves are most common on less vigorous shoots, while trifoliolate, deeply-toothed leaves are characteristic of more vigorous growths. They are usually ovate in outline.

The Forsythia of our gardens, which is the direct opposite of F. suspensa in habit of growth, is F. viridissima, with stiff, erect, unbending, bright green, four-angled stems, which apparently do not grow more than seven or eight feet in height, the average being somewhat less. Its leaves are never trifoliolate, but are simple, narrow, lanceolate, pointed, and evenly, but finely, serrated. An authority has described them as entire, but this is evidently a mistake. In this, and all the others, however, it will be noticed that the first lowest or outside leaves are smaller than the others, and are entire or without teeth on the margins. But these first leaves are mainly true bud-scales or coverings, of which there are two or three pairs, the inner ones having a distinctly accrescent character, growing into serviceable leaves. The tube of the corolla of F. viridissima is small, the petals narrow and of a deeper greenish yellow color than any other form, and the flower-stalks are shorter and with a decided curve downward. The blossoms do not appear here until fully a week later than any others. Between this stiff little species and the more graceful trailing F. suspensa we have the intermediate form or forms which give botanists some trouble to properly classify. F. suspensa is apparently also known as F. Fortunei in Europe, but the plant we are likely to get under this name in America is intermediate in habit between the two species mentioned, being of larger growth than F. viridissima, but without the slender trailing habit of the other, and without any trace of trifoliolate leaves.

The flowers, as a mass, usually have a deeper yellow effect than those of the trailing form, and they are individually not to be distinguished from them in size. The leaves are broader and shorter than those of F. viridissima, and their margins are much more deeply and conspicuously toothed. Any one planting a Forsythia for the sake of the beauty of the blossoms and a very free-flowering habit, would do well to select F. Fortunei, but if the graceful trailing habit is wanted it would not fill the requirements. It should be added, that this F. Fortunei is also sometimes sold as F. viridissima, in which case the purchaser is fortunate, for the last species, if true to name, should never be selected in preference to the others unless space can be afforded for a collection of the various forms. The F. Sieboldi of some catalogues is merely another name for F. suspensa, and we have received at the Arboretum a F. intermedia, from German nurseries, which is hardly to be distinguished from the handsome erect form we know as F. Fortunei. It has been stated that some experimenters have grown both the F. suspensa and F. viridissima from the seeds of the former, but the two plants are so radically different that this hardly seems possible, and most probably there were mistakes somewhere. As the Forsythias are propagated by cuttings about as easily as Willows, there has been little inducement to raise plants from seed, but a series of seedlings from the different species or forms might be very interesting.

To the student of structural botany the efflorescence of Forsythia is interesting from the dimorphic character of the blossoms—that is, all the flowers of one plant will be found with long styles and short stamens, on another plant with short styles and long stamens—which facilitates their cross-fertilization by insects. It is of interest to note these differences, and in an examination of many plants in this vicinity we have found both the long and short styled forms among F. suspensa and also in the plant we know as F. Fortunei, but, so far, only the long-styled form in F. viridissima. The finding of both forms shows that the plants must have been originally derived from different seedlings, but our F. viridissima may all be the descendants of one original individual.

Arnold Arboretum. *J. G. Jack.*

Lilies-of-the-valley.—These plants are forced into bloom and sold at so many seasons of the year that we are apt to lose sight of the fact that they are naturally flowers of May. At present nothing is prettier and more fragrant than their delicate bells nestling among the bold leaves. Naturally grown Lilies-of-the-valley have a beauty superior to those forced, though these flowers are acceptable at any time. There is always a demand for plants which can be grown under trees, and where the trees do not make an entirely dense shade, or where their gross surface-feeding roots are not fatal to any undergrowth, there are few things more satisfactory for such a position than Lilies-of-the-valley. An occasional thinning out and replanting of the crowns and a top-dressing of rich compost late in the season seem to meet their requirements in the garden. There is a noble variety of this plant of French origin known as Fortin. The specimens of this kind with which Messrs. P. Henderson & Co. favored me had grand foliage, but as they were spoiled in the forcing I am unable to say from experience whether the flowers are double the normal size as reputed. There is also a so-called rose-colored variety. This has small flowers, rather more constricted at the mouth than those of the type, and the color under glass entirely disappears. In the open the color is a rather feeble and unsatisfactory one.

Primula cortusoides.—This was lately mentioned as flowering in Massachusetts in April. It is seldom that flowers appear there before ours. My well-established plants are only now in full bloom; very satisfactory and graceful in flower in the border, but scarcely useful for cutting.

Iris cristata was noted last week as being in flower. This plant is too beautiful to dismiss without further mention, for, although a native plant and easily secured, it is one of our choicest border-plants. The foliage is very dwarf, only high enough to form a nest, filled and covered with large open lilac-colored flowers. It seems to me the most pleasing of all the dwarf true Irises.

Begonia Vernon (B. semperflorens atropurpurea).—As I may have unwittingly given a false impression of this plant last year, it may be well to note its behavior under exposure in the open. As stated before, the plants which had been kept under glass last year gave not the slightest sign of being other than a bright-flowered form of B. semperflorens. I transplanted them to a sunny border a few days since, and never beheld a more remarkable transformation in any plants. Within two days the deep green leaves began to take on bronzy and blood-stained tints of the most striking character, and the indications are that in this variety we have a new bedding-plant possessing many excellent points, easily and quickly propagated, bright, striking, showy and free-flowering, dark crimson usually. It should be a good wet-weather plant. Its ability to stand full exposure without scorching of the margin of leaves remains to be tested. It is certainly a variety worthy of trial.

Elizabeth, N. J. *J. N. G.*

The Forest.

The Profitableness of Forest-culture.

At a meeting of the Genesee Valley Forestry Association, held in the Chamber of Commerce rooms at Rochester on the 10th of May, an address was delivered by Mr. B. E. Fernow, Chief of the Division of Forestry, Department of Agriculture. The extracts which follow are taken from a report of this address in the *Rochester Union and Advertiser*:

Profit in Forest-planting.—So far as forest-planting for profit is concerned, I counsel you carefully to scan your conditions before you stake your fortune in that direction. With soil otherwise useless, with low cost of stocking the ground, with no extra expense in watching and managing, and with a market not overstocked when your crop is ready for sale, you may find your plantation one of the best and safest savings-banks where a few thousand dollars can be invested with fair returns in the end.

Aside from the financial result, you will receive, of course, many benefits arising from the existence of the timber-lot which it would be difficult to express in dollars and cents, and yet which are tangible and enhance the value of the surrounding farm-land by making the place more sightly, by furnishing shelter to cattle and crops; by preventing erosion of the soil, if on the hill-side; and, if large enough, by equalizing the flow of springs and brooks and insuring desirable subterranean drainage. Nor does the well-kept timber-plantation need to mature in order to attain its value. Soon the prospective value will be fairly recognized, just as the calf and the colt have in them the promise of becoming a cow and a horse and are valued accordingly.

Looking Forward.—Although there is still plenty of virgin timber in the country, the time when it will be comparatively exhausted is drawing near. We have in the United States about 500,000,000 acres in woodland. If all of this were in good condition, with full-grown timber on it—which is far from being true—there could not be found on it more than 1,500,000,000,000 cubic feet of wood, which is at the rate of 10,000 feet b. m. of saw-timber per acre in the average. Since we use annually from 20,000,000,000 to 25,000,000,000 cubic feet of wood, of which 30,000,000,000 to 40,000,000,000 feet, b. m., is saw-timber, it appears that even with these extravagant assumptions regarding supplies we would exhaust them in sixty or seventy years, assuming that new growth is consumed by increased requirements. That this increase takes place may be learned from my computation, according to which the values of forest-products and wood manufactures during the census years 1860, 1870, 1880 and 1890 amount to $300,000,000, $600,000,000, $900,000,000, $1,200,000,000 respectively, or an increase of thirty per cent. for every decade; and since it takes at least sixty to seventy years to grow saw-timber—what we now cut is usually twice as old or more—it would appear that whoever invests his money in forest-culture to-day must be amply repaid by the crop, albeit his children will reap the profits really. Certain it is, that it always requires time, and quite a long time, before the results of such management become visible, and that is largely why people are afraid to stake their money in the business.

Good Roads and Forestry.—One of the first requisites to make any producing business profitable is to have a market for the product and to be able to readily bring your product to market. Good and permanent roads are necessary to insure continuous profits in forestry as well as in agriculture. The disgraceful condition of the roads through the United States almost everywhere is not only detrimental to good morals, but also to the pockets of the farmer and of the consumer of farm-products. For profitable forest-management good, permanent roads are indispensable. Their money value may be judged from the experience of the little dukedom of Brunswick, where, without any other changes, the building of a rational system of roads through its forest-domain increased the income from the forest-management by twenty per cent. That forest-management pays in Europe may not any further help our argument than to assure us that it pays under certain conditions. The conditions are, first, a dense population, which makes a market for every stick of wood down to the merest brush; a well-established forestry system which it has taken centuries to build up; wood-lawns in good or fair producing condition as a result of this long application of rational management; skillful foresters, who manage the Government forests and give advice and good example to private owners. Many a farmer there finds his wood-lot the best-paying and never-failing crop, and there are communities, towns and cities where, instead of paying taxes, a dividend is paid to the citizen from the surplus resulting from the well-managed woodlands.

State Forests.—In the Government forests the annual net profits range from $4.11 per acre of forest in the highly cultivated and densely populated kingdom of Saxony to $1.19 in mountainous Bavaria, where the Government forests comprise 2,300,000 acres, on which the Government spends $3,130,000, and gets in return $5,880,000, netting $2,730,000 every year, and giving besides employment to a large force of men. In Prussia the net annual profit for every acre of woodland was at the rate of $1.31 on 6,000,000 acres woodland, the expenditure last year being nearly $8,800,000 for the administration, and with prices in the woods of $3.00 per cord of fire-wood in the average, and $10.32 per 1,000 feet b. m. of saw-timber the returns were over $17,600,000, netting $8,835,119, and this is continuous, ever-increasing revenue.

Why should not the state of New York, now owning as state property twice the area which little Saxony owns in woodlands, and proposing to acquire additional lands so as to make the area between that of Bavaria and Prussia's Government forests; why should not New York make its Adirondack forests, if not as profitable, yet fairly so, as those states have made their woodlands pay? There are really only two difficulties in the way—these are politics and private greed!

Otherwise, with, say, 4,000,000 acres set aside as a reserve, if only half that territory is in fair producing capacity an annual cut of 250,000,000 feet would be a low estimate, and under skillful management the annual growth would soon represent double that amount, assuring a handsome revenue in years to come, besides securing a state park for health, pleasure, hunting, fishing, preservation of water-flow and lumber-supply, and all without expense. To bring this about it is necessary to secure as soon as possible the acreage before it becomes more expensive, to place it under competent administration, to open up and make accessible the wilderness by a rational system of well-built roads, and inviting, not keeping out the railroads, under such restrictions, to be sure, as will properly guard the forest against danger from fires; for accessibility is the keynote of practicable and profitable forest-management.

The lumberman can then be satisfied by selling the logs, the friend of nature will find plenty of opportunity to enjoy himself, the game will find the protecting thicket which is now unknown, and the forest-cover, instead of decreasing, will be increased in density and quality under the skillful use of the axe by the forester. But the profitableness of forest-management in the Adirondack, like that of the wood-lot on the farm, cannot be stated altogether in dollars and cents, for its indirect value may far outstrip its direct revenue-producing value. As the properly placed wood-lot may protect the crops from injurious winds, give shelter to cattle, and keep the soil from erosion, and the water-flow of springs and brooks even, so the Adirondack forests, kept in proper condition, have an influence upon climate and water-flow for the whole state, and with it, upon its commercial condition and prosperity, which far outweighs the profits that may be derived from their timber, and this indirect profit it is that states and communities should have in view.

While, then, forest-culture may not be profitable in individual cases and for private purposes, it is always profitable for the community at large, for it insures favorable conditions in general and continuity of one of the most useful resources.

Correspondence.

The Winter-killing of Conifers.

To the Editor of Garden and Forest:

Sir,—A note in Garden and Forest concerning the injuries to Retinosporas and other conifers in the vicinity of New York, leads me to say that, although the winter here has been most severe, none of the conifers on my place have suffered in the least. Perhaps the injury to these trees in other places may be attributed to the drought in August and September of last year, which was very severe in some parts of the country, rather than to the cold winter. Thirty or forty years ago, whenever I lost an evergreen tree, I used to attribute it to the severe cold, and the same view was held by my friend, the late Winthrop Sargent, of Fishkill, with whom in those days I was in constant correspondence on horticultural subjects. But after many years of experience and close observation I have learned to give my trees much better cultivation, and have discovered that serious injury more often results from the

effects of dry weather in summer than it does from severe cold the following winter.

Of course, our winters here in New England are considerably colder than yours in New York, and if it was the cold alone which injured the trees in your vicinity we surely should have suffered more or less here. This is not the case, however. Of the numerous Spruces and Firs which I have been growing for many years there are twenty species at least which have not been injured by the winters for twenty years past. The Retinosporas do not seem to be quite so hardy as the Spruces, especially R. pisifera and some of its varieties. I have occasionally lost one of these, and the small branches die. I have plants of R. squarrosa, R. filifera and R. obtusa twenty feet high which have never been at all injured, and the same is true of Thujopsis dolobrata and T. Standishii, although they are not quite as large.

Wellesley, Mass. *H. H. Hunnewell.*

[We attributed the injury to coniferous trees in this vicinity this year to very cold winds in March after a few unusually warm days. The injured trees, however, may have been weakened by the drought of last year. There can be no doubt as to the accuracy of Mr. Hunnewell's observation in regard to the effect of autumn droughts on coniferous trees. If the ground after a dry autumn does not get saturated with late rains before it freezes up for the winter, evergreen trees are certain to suffer more than others, for the leaves continue to transpire moisture to a certain extent all winter, while the water from rains and snows cannot penetrate to the roots through the hard frozen surface. If, therefore, the subsoil is dry—that is, if the roots cannot respond to the demands for moisture made by the leaves—the trees will suffer. We have a note from Mr. William Falconer stating that Mr. Charles A. Dana's collection of conifers at Dosoris, Long Island, suffered to a considerable extent, and the injury there was done in March, at the beginning of which month the evergreens were never in better form. Some of the Retinosporas, like the varieties of R. pisifera, especially filifera, suffered seriously; others, like R. squarrosa and plumosa, to a less degree, while the various forms of R. obtusa suffered least of all. It is worth noting, too, that at Dosoris, Azalea amœna came out unscathed, although it was in the teeth of the wind, and Osmanthus ilicifolius was also unharmed, while Broome, which had survived for years, was nearly killed, and Furze suffered still more.—ED.]

Rose Sports.

To the Editor of GARDEN AND FOREST:

Sir,—An acquaintance of mine has a bush of the Baroness Rothschild Rose which has sported—that is, one of its branches has flowers which resemble the parent plant in form but are nearly pure white in color. Do sports of this kind always remain true when grafted, and will it be worth while to try to perpetuate this one?

Montclair, N. J. *C. R.*

[It is always worth while to perpetuate a good Rose if it is any improvement on what we already have. The Baroness Rothschild is one of those varieties which have a tendency to sport, and we already have some good white-flowered plants from it as a parent. Mabel Morrison is one, and so is the Merveille de Lyon. There is no certainty, however, that any sport when grafted will remain true. Very often the first flowers from grafts will be identical with those of the original plant. These sports themselves are more liable to sport than other plants, and some of them lack fixity to such a degree that one can never be sure of them, although a portion of the grafts may continue to persist in the new form. Of course, stock and soil may have some influence upon the grafts, but, really, our knowledge of these matters is limited as yet, and we cannot account for many of the vagaries of sports.

We infer that the difference from the sport mentioned by our correspondent and its parent is simply one in the color of the flower. There are many other cases in which there is a distinct change in the habit of the plant as, for example, where some Rose, like Victor Verdier or Niphetos, develops so-called climbing varieties. This means that from the original plant there will start some shoot which grows with remarkable vigor. The Devoniensis, for example, is not a strong grower, but its climbing varieties sometimes grow twenty feet in a season, although its flowers are true to the original type. Variations of this sort may be traced to some remote ancestor, but, so far as we know, this habit of growth is more liable to be fixed than simply variation of color.—ED.]

Sweet Alyssum.

To the Editor of GARDEN AND FOREST:

Sir,—In summer-time no family owning the smallest lot of ground need be without a pretty centre-piece for the table if precaution has been taken to sow some seeds of Sweet Alyssum in April or May. This little plant thrives in any soil, and two packets of seeds sown in a bed or as a border will yield a plentiful supply of flowers the entire season through. They should be picked with long stems, and in plentiful quantity. The children of the family will do this work with pleasure, and they may also be taught to arrange the flowers afterward. A silver fern-dish is admirable for this purpose, but any low open bowl will answer, if it be but of glazed earthenware.

A piece of wire netting with meshes about half an inch square, a trifle larger than the top of the bowl, should be placed on the bowl when filled with water. Then set a blossom in each mesh, making sure that the stem reaches well into the water. The netting keeps the flowers in place; they stand more erect, and, in changing the water, it is only necessary to lift the netting, and replace it when the bowl is filled. By changing the water every morning a bowl of flowers will keep quite fresh for three days, as the stems do not crowd upon each other as they do in the old way.

Mignonette mingles well with Sweet Alyssum or Heliotrope or a few sprays of pink or red Geranium; but only flowers of one color should be used at a time, and these sparingly.

Brooklyn, N. Y. *Mary F. Harman.*

The Flowers of Euphorbia.

To the Editor of GARDEN AND FOREST:

Sir,—Your correspondent O. O. makes a very natural mistake when he says, on page 224 of your issue for May 11th, that it is the flowers that are ornamental in the case of the Euphorbia jacquiniæflora. Referring to Gray's *Field, Forest and Garden Botany*, we read: "E. fulgens, or jacquiniæflora, . . . what appears like a 5-cleft corolla are the bright red lobes of the involucre."

Milton, Mass. *Nathaniel T. Kidder.*

Notes.

The Diet of the Tyrol recently decreed that a heavy fine shall be imposed upon any person offering for sale a sample of Edelweiss that has been pulled up by the roots.

We have received a photograph from Mr. W. B. Hartland, of Cork, Ireland, of a mass of Horsfield Daffodils planted thickly over a bed of about a hundred square feet in extent. Judging from the picture, these plants have wonderful vigor and attain remarkably good form in the "old country."

The white flowers of the Black Haw are beautifying many of the road-side thickets within a few miles of this city, and there is no more attractive small tree or large shrub than this native Viburnum prunifolium as it appears in our woods and parks. Besides the beautiful flowers, the bright red bark of the young twigs and the reddish tint of the young leaves add to the beauty of the plant, and the foliage is no less striking in autumn, when it turns from its bright green to rich orange and purple.

The earliest Pæonies to bloom, and they are now at their best, are the varieties of P. tenuifolia. These are not new plants by any means, but since they are so easily cultivated, so perfectly hardy and so beautiful, it is remarkable that they are not more common. The single form is especially beautiful with its dark crimson flowers, which are borne on stems some fifteen or eighteen inches high surrounded by finely cut foliage. The double-flowered forms are also very beautiful, and the foliage is rather more delicate.

A preliminary announcement, with schedule of prizes for the Chrysanthemum Show at Madison Square Garden next fall, has been issued. The exhibition will be under the auspices

of the New York Florists' Club, and will be held from November 1st to the 6th inclusive. Six thousand five hundred dollars in premiums are already offered, and it is probable that a supplementary prize-list will be issued later. We are glad to observe that preparations are being made for a spring show next year, and that exhibitions both in the spring and in the autumn may be expected every year hereafter.

Flowering specimens of Bechtel's double-flowered American Crab have been sent to us by E. A. Bechtel's Sons, of the Staunton Nursery, Staunton, Illinois. It is a double-flowered variety of the western form of Pyrus coronaria, which botanists have called variety Iœnsis, and is said to have originated in the neighborhood of Staunton. The flowers are pink, very double, and, like those of all the native Crabs of eastern America, delightfully fragrant, in this respect being far superior to any of the double-flowered Crab-apples in cultivation. The fact that the flowers are not produced until the leaves are almost fully grown, and much later than those of any other Apple-tree, adds decidedly to the value of this novelty, which, judging by the specimens before us, is one of the most beautiful hardy plants of recent introduction.

A writer in the *Boston Evening Transcript* declares that the plantations made by the Boston and Albany Railway Company around its suburban stations have had a decided influence in improving the horticultural taste of the people living along its lines, and that good plants, like Forsythia Fortunei and other hardy shrubs, have been made common and popular in this way. The scheme under which these plantations are made has already been described in these columns. The station-grounds are decorated with trees and the best hardy shrubs, preference being usually given to native species, as being more hardy and generally more satisfactory than exotic plants; no bedding or tender plants whatever are used, the effect being obtained from well-kept lawns, skillfully arranged shrubberies, in which it has been aimed to secure a succession of flowers, handsome fruit and brilliantly colored autumn leaves.

A correspondent of *Gartenflora*, writing from Orizaba, in Mexico, says that one of the most beautiful flowering plants to be seen there is Datura arborescens. "It is a native of Peru, but flourishes finely here. Where sufficient room is given, it develops as a broad shrub some fifteen feet in height, and at almost every season of the year is covered with a profusion of large, dazzling white flowers. The burden of these flowers weighs down the branches, but the beauty of the plant is merely increased by this fact. The double sort grows even more luxuriantly. Native Mexicans usually train these plants as standards with a flat, wheel-shaped head, from the under side of which depend the many blossoms. But, to me, their natural manner of growth is even more attractive." This tree-like shrub is sometimes cultivated in our conservatories, but to those who have not seen it there the description we quote will scarcely suggest its intimate relationship to D. Stramonium, our common Thorn-apple or "Jimson-weed."

We received last week a large package of cut Orchid-flowers, mainly Cypripediums, from the collection of Mr. T. F. MacFadden, of Cincinnati, Ohio. Among them were several spikes of C. Rothschildianum, each with four well-expanded flowers, and one splendid form with three flowers of great size and extraordinarily rich coloring. Unlike many other Cypripediums, the blossoms of this one remain on the spike until all the buds are opened, which makes it very desirable. There was also a six-flowered spike of C. leucorrhodum, with a superb variety of C. selligerum majus carrying three flowers. Among other handsome flowers were some of C. Schroderæ splendens, fine examples of C. grande and C. albopurpureum, several distinct and unusually richly colored flowers of C. Curtisii, with good examples of C. almun, C. macropterum, C. niveum, C. bellatalum and many others. The flowers, as a class, showed unusually good care and cultivation, and reflected great credit on Mr. John Rose, the gardener, who has this fine collection in charge.

We received last week from E. O. Orpet, South Lancaster, Massachusetts, a collection of Narcissus-flowers in some forty varieties, representing the choicest kinds in all sections. The flowers were well grown, and formed beautiful, graceful masses. All the leading kinds were represented, and there were many interesting ones seldom seen and not often found here. In the Ajax section, P. R. Barr was noted as a very bold, full, yellow flower. Of the Discolors, James Walker and Michael Foster were beautiful and distinct. The collection was rich in the Incomparabilis section. Some distinct kinds were Barr's Conspicuus, Orphée and Maurice Vilmorin, all with deeply stained orange cups. Hume's Giant was an extra distinct flower with broad-spreading cup and a good clear yellow. The forms of Burbridge's hybrids, the connecting link between N. poeticus and N. incomparabilis, were very charming, and were represented by a selection of the best kinds—Crown Princess, pure white perianth, canary cup, edged scarlet, a rare and distinct kind; Constance Falstaff; John Bain, a charming flower with citron cup and white perianth, and the rare Princess Louise, with widely expanded deep orange-scarlet cup and large white perianth.

Among the many schools for summer study which are promised for the present year will be a course of instruction in horticulture at the Bussey Institute, beginning on July 6th and ending on August 3d. A synopsis of the lectures which are to be delivered by Mr. B. M. Watson, Jr., shows that the instruction will cover a wide range of subjects which will be of scientific and practical value to students of horticulture. These subjects will include soils, propagation of plants by various methods, grafting, construction of glass-houses, insects and fungi, hybridizing, pruning, and others of equal importance. Supplementary lectures will be given from time to time, when the exercises will be held in the open air, and illustrated by visits to the more important classes of plants in ordinary cultivation, such as conifers, flowering shrubs, herbaceous plants, garden-annuals, house-plants, grasses, Rhododendrons, Roses, Chrysanthemums and Lilies. In addition to the instruction in the theory and practice of gardening and the field-talks already spoken of, there will be opportunity for practical work in both greenhouse and garden. About eight hours a day will be devoted to work of different kinds, and the course will be open to women as well as men. The collection of trees and shrubs at the Arnold Arboretum will give ample opportunities for illustrating this course, which is one of the new undertakings to which all those interested in horticulture will wish the highest success.

In addressing the Association of American Cemetery Superintendents at Chicago last autumn, Mr. Eurich, of Toledo, Ohio, said, with regard to plants that can be used to cover the ground beneath trees where grass will not grow, that he had experimented successfully with two "sod-forming" plants, Herniaria glabra and Veronica repens. The first-named, he explained, "is a moss-like, creeping plant which covers the ground in a very short time, and surpasses a grass-sward in beauty. A strip of ground was planted in April with one hundred such plants set apart, and in less than two months the entire surface was covered closely. The plants were thinned out so that we obtained more than twice the original number, and an adjoining new piece was planted with the same result. This procedure was repeated in August, and before winter set in we had a beautiful greensward of Herniaria growing. A very cold winter followed, and the plants were tinged slightly brown, but by April were again charmingly green. H. glabra will thrive in any soil in the open sun or in the shade." Veronica repens, the speaker said, "has somewhat larger leaves of shining green and generally the same characteristics as Herniaria glabra. A grave-mound planted with it in August was completely covered by fall, and with a slight protection during the winter was brighter and fresher than the mounds covered with Myrtle (Vinca) and Ivy. The special feature of this plant is that in May it is completely covered with very light blue flowers as low as the plant itself."

Edward von Regel, the venerable Director of the Imperial Botanic Garden at St. Petersburg, died on the 27th of April, in his seventy-seventh year, he having been born at Gotha on August 13th, 1815. Regel was first established at Zurich, but many years ago was called to the directorship of the St. Petersburg garden, which he has labored assiduously to bring to its present state of efficiency. He was the author of a large number of botanical works devoted mostly to the description of plants collected by Russian travelers in central Asia. He was the founder and for many years the editor of the *Gartenflora*, and in the Acts of the St. Petersburg garden are many papers upon garden-plants from his pen. To Regel, more than to any one else, is due the success of the International Horticultural Exhibition held at St. Petersburg in 1869; and he has enriched the gardens of America and Europe by his liberal distributions of the seeds and plants gathered by his correspondents in all parts of the vast Muscovite empire. No one has surpassed him in this or in his desire to serve his associates, and to the intelligent zeal and broad-minded liberality of this active and industrious man is due the introduction of many of the best plants which have been brought into gardens during the last twenty-five years.